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FILE REF: [Click [here](#) and type file ref.]TO: Mike Donofrio
Forestville Millpond FileFROM: Steve Hogler
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SUBJECT: 2016 Forestville Millpond Fish Survey

The Forestville Millpond (WBIC-95700) is a 65 acre impoundment of the Ahnapee River located in southern Door County (WDNR 2001). The millpond has a maximum depth of 6 feet, an average depth of 2 feet and is located in an agricultural watershed. Historical records indicate that the first dam was constructed at this location in 1877 and the river has been impounded the majority of years since (Door County SWCD 1996). The current dam was reconstructed in 1982.

Historically the fishery found in the millpond has alternated between a desirable mix of Northern Pike, Largemouth Bass and panfish to one dominated by bullhead and Common Carp (Lychwick 1984). Poor water quality has likely been the driver of the make-up of fish community due to the shallow nature of the millpond and the level of nutrients that enter the millpond from the watershed. High nutrient levels have led to algae blooms which have then been followed by frequent winter kills caused by low dissolved oxygen as algae decomposed over winter. Following the fish kills, the millpond has been restocked with a desirable mix of fish (Lychwick 1984)

Following reconstruction of the dam in 1982, DNR Fish Management chemically treated the millpond using rotenone to remove undesirable fish species and restocked gamefish species (Lychwick 1984). Although the entire stream above the millpond was not treated, it was believed that the vast majority of Common Carp found in the impoundment were removed by the rotenone treatment. Following the rotenone treatment the millpond was restocked with a mixture of Largemouth Bass, Smallmouth Bass and Northern Pike (Table 1).

Table 1. The summary of fish stocked into the Forestville Millpond following the 1984 rotenone treatment.

Year	Species	Age Class	Number Fish Stocked	Average Fish Length (IN)
1983	NORTHERN PIKE	FINGERLING	375	11
1985	MUSKELLUNGE	FRY	65,000	1
1985	NORTHERN PIKE	FINGERLING	325	9
1986	NORTHERN PIKE	FINGERLING	325	9
1986	SMALLMOUTH BASS	FINGERLING	2,000	3
1987	NORTHERN PIKE	FINGERLING	975	9
1990	NORTHERN PIKE	FRY	100,000	1
1991	LARGEMOUTH BASS	FINGERLING	7,000	2
1991	NORTHERN PIKE	FINGERLING	360	7.9
1992	LARGEMOUTH BASS	FINGERLING	3,250	1
1992	NORTHERN PIKE	FINGERLING	2,830	5.5
1993	LARGEMOUTH BASS	FINGERLING	7,000	1

Although it initially appeared that stocking had been successful, additional large fish kills occurred on the millpond by 1996 (Door County SWCD 1996). Both were attributed to low dissolved oxygen levels in the millpond likely caused by excess nutrients entering the millpond which fueled large algae blooms followed by the resultant decomposition of the dead algae.

The last fishery survey was conducted in 2008 when Forestville Millpond was electroshocked during the evening of May 6, 2008 to assess the lake's gamefish populations (Hogler and Surendonk 2008). Survey results indicate that the Largemouth Bass population was doing well with above average growth although several young age classes were missing and that the Northern Pike and panfish catches were less than expected based on past surveys. Common Carp was the dominant species captured during the survey likely indicating that poor water quality was still an issue in the millpond.

2016 Survey Methods and Results:

Following Wisconsin lake sampling protocols, Forestville Millpond was surveyed during the evening of June 1, 2016 to assess the lake's fish populations. During the 1.5 hours of electrofishing, the entire shoreline was surveyed and an attempt was made to net all observed fish. All landed fish were identified, measured to the nearest millimeter and then released. Spines from Largemouth Bass and scales from Black Crappie were collected for age analysis before these species were released. Common Carp and White Sucker were not netted although they were counted if netters could touch the fish.

During the 1.5 hours of shocking we captured 293 individual fish representing ten species. Total CPE was 195.3 fish per hour or 125.2 fish per mile shocked. Common Carp dominated the catch followed by Yellow Perch and Largemouth Bass with fewer fish of other species captured (Table 2).

Table 2. Abundance and CPE of fish captured during 2016 spring electrofishing on the Forestville Millpond.

Species	Number	CPE (Fish/ HR)	CPE (Fish/Mile)	Average Length (mm)	Size Range (mm)
Northern Pike	4	2.7	1.7	473 mm (18.6")	413-537 mm (16.3" to 21.1")
Largemouth Bass	29	19.3	12.4	367 mm (14.4")	325-409 mm (12.8" to 16.1")
Yellow Perch	37	24.7	15.8	189 mm (7.4")	85-308 mm (3.3" to 12.1")
Bluegill	5	3.3	2.1	136 mm (5.4")	72-202 mm (2.8" to 8")
Pumpkinseed Sunfish	1	0.7	0.4	106 mm (4.2")	106 mm (4.2")
Black Bullhead	1	0.7	0.4	259 mm (10.2")	259 mm (10.2")
Yellow Bullhead	1	0.7	0.4	270 mm (10.6")	270 mm (10.6")
Black Crappie	9	6.0	3.8	305 mm (12")	297-312 mm (11.7" to 12.5")
Common Carp	190	126.7	81.2	--	--
White Sucker	16	10.7	6.8	--	--
Total	293	195.3	125.2		

Gamefish

Largemouth Bass were the most common gamefish captured during this survey (Table 2). The 29 handled bass ranged in length from 325 mm to 409 mm (12.8" to 16.1") and had an average length of 367 mm (14.4") (Table 3). Twenty-one of the twenty-nine captured bass (72.4%) were longer than the 356 mm (14") minimum harvest size limit imposed on anglers.

Table 3. The length frequency of fish captured from Forestville Millpond during the June 2016 survey.

Length (in) mm	Largemouth Bass	Northern Pike	Yellow Perch	Bluegill	Pumpkin- seed Sunfish	Black Bullhead	Yellow Bullhead	Black Crappie
70				1				
80			4					
90			2					
(4") 100			2		1			
110				1				
120								
130				1				
140			1					
(6") 150			1	1				
160			2					
170			1					
180			1					
190			3					
(8") 200			2	1				
210			2					
220			5					
230			5					
240			4					
(10") 250						1		
260			1					
270							1	
280								
290								1
(12") 300			1					6
310								2
320	1							
330	1							
340	4							
(14") 350	3							
360	8							
370	4							
380	6							
390								
(16") 400	2							
410		1						
420								
430								
440								
(18") 450		1						
460								
470								
480		1						
490								
(20") 500								
510								
520								
530		1						
Total	29	4	37	5	1	1	1	9
Ave. Length	367 (14.4")	473 (18.6")	189 (7.4")	136 (5.4")	106 (4.2")	259 (10.2")	270 (10.6")	305 (12")
S.D.	18.4	52.0	59.9	48.1	--	--	--	5.0

Dorsal spine samples were collected from all captured bass to estimate age. Analysis of the spines indicated that in our sample, captured bass ranged in age from age 4 through age 7 (Table 4). Most bass were either age 4 or age 5, with fewer bass in the other age categories. Comparison to the most recent survey and statewide length at age information found on the state fish database indicates that in 2016, length at age was similar to results found in 2008 and was near to statewide averages across Wisconsin for bass (Table 5). Since few bass were captured overall and since few bass were greater in age than age 6, growth information should be viewed cautiously.

Table 4. The distribution of age of Largemouth Bass captured from Forestville Millpond, June 1, 2016.

Length (in) mm	Largemouth Bass	Age						
		1	2	3	4	5	6	7
(12") 300								
310								
320	1				1			
330	1					1		
340	4				3	1		
(14") 350	3				3			
360	8				3	4		1
370	4				1	3		
380	6					3	3	
390								
(16") 400	2						1	1
Total	29				11	12	4	2
Ave. Length	367 (14.4")				355 (14")	368 (14.5")	390 (15.4")	383 (15.1")
S.D.	18.4				13	13.6	12.9	30.4

Table 5. Comparison of statewide length at age averages to those of Forestville Millpond for Largemouth Bass captured during surveys in 2008 and 2016. Lengths are in mm and inches (in).

Largemouth Bass	AGE 1	AGE 2	AGE 3	AGE 4	AGE 5	AGE 6	AGE 7	AGE 8	AGE 9
2016	--	--	--	355 (14")	368 (14.5")	390 (15.4")	383 (15.1")	--	--
2008	--	222 (8.7")	279 (11")	348 (13.7")	385 (15.2")	393 (15.5")	415 (16.3")	374 (14.7")	--
State Average	97 (3.8")	165 (6.5")	229 (9")	290 (11.4")	338 (13.3")	384 (15.1")	414 (16.3")	447 (17.6")	454 (17.9")

Only four Northern Pike were captured during this survey (Table 2). The pike that were captured ranged in length from 413 mm to 537 mm (16.3" to 21.1") and had an average length of 473 mm (18.6") (Table 3).

Panfish

Yellow Perch were the most abundant panfish captured during this survey (Table 2). The 37 perch ranged in length from 85 mm to 308 mm (3.3" to 12.1") and had an average length of 189 mm (7.4") (Table 3). Most of the measured perch were between 140 mm (5.5") and 240 mm (9.5") in length, with fewer small fish captured.

Black Crappie, Bluegill and Pumpkinseed Sunfish were also captured during electrofishing (Table 2). The 9 Black Crappie ranged in length from 297 mm to 313 mm (11.7" to 12.5") and had an average length of 305 mm (12") (Table 3). Ages were determined for seven of the

crappie. Age 4 and Age 5 were the only two age classes identified in our sample. Five of the seven Black Crappie were age 5.

The 5 Bluegill captured had an average length of 136 mm (5.4") and the single Pumpkinseed Sunfish was 106 mm in length (4.2") (Table 3).

Other Species

Common Carp was the most abundant species seen during our survey (Table 2). The 190 fish that were counted should be viewed as a minimum number because in one small bay an extremely large number of rolling carp were observed outside our electric field. White sucker and bullhead were also seen in low numbers but were not netted.

Discussion and Conclusions:

It appears that poor water quality continues to be an issue in the millpond. With the dominance of Common Carp in our catch, it is likely that turbid water and low dissolved oxygen levels continue to influence the composition of the fish community in the millpond.

The Largemouth Bass population appears to be in reasonable numbers with good growth rates although no fish smaller than 325 mm (12.8") in length and only few year classes were present in our sample. Poor water quality that may have negatively impacted recruitment of recent year classes may be responsible for the lack of small bass in the millpond. Growth based on length at age comparisons with state averages indicates that bass are growing near state rates in the millpond. Since over 72% of the captured bass were greater than the minimum size limit, it appears that the millpond has the potential to produce large size bass.

The northern pike catch was less than expected. The undeveloped portions of the shoreline of the millpond along with upriver sections of the Ahnapee River should provide ample spawning habitat for northern pike. It is not clear if poor survival of pike stocked following the rotenone treatment, poor recruitment or if angler harvest was responsible for the lack of Northern Pike seen during this survey.

Panfish numbers were also lower than expected based on past surveys of this productive waterbody. Since, most of the panfish captured, Black Crappie and Yellow Perch, are more tolerant to low dissolved oxygen levels than are Bluegill, it is likely that environmental factors favor these species at this time. However, since we captured yearling Bluegill, Pumpkinseed Sunfish and Yellow Perch in our catch, it appears that panfish are successfully reproducing in the lake. Panfish, especially Black Crappie and Yellow Perch, show the potential of reaching large size in this productive millpond.

Two or three years of northern pike stocking should be considered to improve pike abundance in the millpond and upper Ahnapee River.

References:

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